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REPORT  
ON THE WORKING OF THE  
HARCOURT BUTLER INSTITUTE OF  
PUBLIC HEALTH, RANGOON  
FOR THE YEAR 1940

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# RESOLUTION

ON THE

## Report on the Working of the Harcourt Butler Institute of Public Health, Rangoon

For the Year 1940.

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Extract from the Proceedings of the Government of Burma, Health and Public  
Works Department, No. 361SJ41, dated the 1st August 1941.

READ—

The Report on the Working of the Harcourt Butler Institute of Public  
Health, Rangoon, for the year 1940.

RESOLVED THAT—

The Report be published.

By order,

SHWE BAW,

*Secretary to the Govt. of Burma,  
Health and Public Works Department.*





# REPORT

ON THE WORKING OF THE

## Harcourt Butler Institute of Public Health, Rangoon

For the Year 1940.

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STAFF OF THE INSTITUTE—*Director*.—Mr. K. P. Kundu, M.B. (Cal.), D.Bact. (Lond.).

*Assistant Director*.—Post held in abeyance.

*Malariologist*.—U Tin, D.T.M.

*Public Analyst*.—Post held in abeyance.

*Assistant Chemist*.—Mr. G. C. Moitra, B.Sc., F.C.S., from 1st January to 28th March, and from 8th May to 31st December 1940.

Mr. A. K. Sen-Gupta, M.Sc., F.I.C.S., from 29th March to 7th May 1940.

*Second Assistant Chemist*.—Mr. A. K. Sen-Gupta, M.Sc., F.I.C.S., from 1st January to 28th March, and from 8th May to 31st December 1940.

*Assistant Malariologist*.—Mr. Robert K. Singh, M.B., B.S.

*Assistant Bacteriologist*.—Sub-Assistant Surgeon U Pa How.

*Second Assistant Bacteriologist*.—Sub-Assistant Surgeon U Kaung Mra Thoo, from 1st January to 30th June 1940.

Sub-Assistant Surgeon U Ohn Pe, from 11th July to 31st December 1940.

*Tutor for the Special Class of training of Public Health Inspectors*.—Sub-Assistant Surgeon U Kaung Mra Thoo, from 1st July to 31st December 1940.

*Visitors*.—The following persons visited the Institute during the year :—

Dr. Bruce Mayne, Special Expert, United States Public Health Service and member of the League of Nations Malaria Commission.

Dr. L. L. Williams, Senior Surgeon, United States Public Health Service and member of the League of Nations Malaria Commission.

ACTIVITIES OF THE INSTITUTE.—The activities of the Institute are divided into (1) Teaching, (2) Routine Public Health Laboratory work, (3) Investigation and Research, (4) Public Health Propaganda, and (5) Issue of Prophylactic Vaccines.



I. INSTRUCTIONS.—The following courses of instructions were given during the year :—

(1) The special course of training of candidates from scheduled areas, such as the Federated Shan States and the Chin Hills District, as Public Health Inspectors.

(2) The Government of Burma Licence in Hygiene Course for Sub-Assistant Surgeons.

Lectures and demonstrations on Hygiene and Public Health were given to the students of the following Institutions :—

- (1) Medical College of the Rangoon University, and
- (2) Burma Government Medical School.

A special course of instruction on Hygiene and Public Health was given to the Post-Graduate Sub-Assistant Surgeons of the Medical Department from 1st April to 31st May 1940. This course was of two months duration instead of one month as was the case in previous years.

Special training in anti-malaria measures was given to the following persons at different periods of the year :—

- (1) Mr. K. P. Paul, Public Health Inspector, Sandoway.
- (2) Maung Ba Tha, Public Health Inspector, Kyaukpyu.
- (3) Mr. S. Murray, Public Health Inspector, Katha.
- (4) Six soldiers of the Gloucestershire Regiment.
- (5) Maung Aung Shein, Anti-Malaria Mate of the British Military Hospital, Maymyo.
- (6) Seven sepoy of the Burma Rifles.
- (7) Mr. S. C. Dutta, Public Health Inspector, Bhamo.
- (8) Sub-Assistant Surgeon U Tin Sein, Minbu District.
- (9) U Ba Nyan, Officiating Assistant District Health Officer, Northern Shan States.

During the year under report, Government was pleased to sanction the entertainment of a full time Sub-Assistant Surgeon of the Public Health Department, who has a licence in Hygiene qualification, to act as a special tutor for the Public Health Inspectors Training Course. This arrangement proved to be highly satisfactory not only in respect of efficient teaching, but also in proper maintenance and upkeep of teaching materials. The tutor took charge of various teaching diagrams, posters and models kept at the museum of the Institute and rendered valuable assistance to every lecturer. A noteworthy feature of this year's training of Public Health Inspectors was that, coaching classes were held by the special tutor on all working days. A long-felt need for a whole time demonstrator, who could devote his time solely to teaching work was fulfilled during the year under report.



EXAMINATIONS.—The following examinations were held during the year at this Institute :—

(1) Efficiency Bar examination of Mr. T. M. Dutta, Public Health Inspector, Insein District.

(2) Efficiency Bar examination of Mr. Sylvester, Public Health Inspector, Myaungmya.

(3) Efficiency Bar examination of U Tun Pe, Public Health Inspector, Hanthawaddy District.

(4) Examination of Sub-Assistant Surgeon U Ohn Pe for promotion to the stage of Rs. 175.

(5) Examination of Health Visitors.

(6) Examination of the students of the Burma Government Medical School, on Hygiene and Public Health.

(7) Examination of the students of the Medical College of the Rangoon University, on Hygiene and Public Health.

(8) Government of Burma Qualifying Examination for Public Health Inspectors.

(9) Examination for Government Licence in Hygiene.

## II. LABORATORY ROUTINE—*Bacteriological Laboratory.*—

(i) *Preparation of Cholera Vaccine.*—The demand for cholera vaccine was considerably heavy during the year under report. The total number of doses of bulk vaccine manufactured was 834,095, as against 210,125 of the previous year. Approximately 700,000 doses of the above quantity were filled in ampoules and issued to the Store-keeper for distribution, as against 235,965 doses of the year previous. The technique employed for the preparation of this vaccine was the same as in previous years.

To cope with this extraordinary demand, the staff of the bacteriological laboratory had to work under sustained pressure not only on week days but also during many holidays.

### (ii) *Bacteriological analysis of water samples.*—

|  |     |     |     |
|--|-----|-----|-----|
| Hlawga Lakes (Corporation of Rangoon)                  | ... | ... | 106 |
| Tube Wells under the Burma Underground Water Act, 1930 |     |     | 36  |
| Samples sent by the Superintendents of Jails           | ... | ... | 39  |
| Samples sent by Local Bodies                           | ... | ... | 82  |
| Samples sent by the Public Works Department            | ... | ... | 17  |
| Samples sent by the Civil and Military Police          | ... | ... | 9   |
| Samples sent by the Port Health Officer, Rangoon       |     | ... | 1   |
| Others   | ... | ... | 50  |
| Total  | ... | ... | 340 |



|   |    |
|---|----|
| (iii) Examination of shaving brushes, sent by the Appraiser of the Customs Department, for the presence of <i>B. anthracis</i> ... .. | 35 |
| (iv) Examination of sputum for <i>Mycobacterium tuberculosis</i> ... ..   | 15 |
| (v) Examination of fæces for the presence of ova, protozoa, etc. ... ..   | 33 |
| (vi) Chemical, microscopical and cultural examination of urine ... ..   | 7  |
| (vii) Examination of smears for <i>Mycobacterium lepræ</i> ...  | 6  |
| (viii) Bacteriological examination of tinned meat for the presence of Salmonella group of organisms ... ..                            | 2  |
| (ix) Sterilization of tooth brushes sent by the Burma Red Cross Society and the Burma War Comforts Association ...                    |    |

(x) *Preparation of Bacterial Emulsions and High Titre sera.*—Bacterial Emulsions of the typhoid and paratyphoid group of organisms were prepared in accordance with the instructions detailed in the Medical Council Research Series No. 51. Agglutinating cholera serum was also prepared from dried "Inaba 'O'" antigen, obtained from the Standards Laboratory, Oxford.

(xi) *Stock cultures.*—More than 100 bacterial cultures were maintained in pure state during the year.

(xii) *Media.*—More than 1,960,000 c.cs. of media of various description were prepared during the year under report.

(xiii) Animal experiments ... .. 75

(xiv) *Identification of rats.*—The following table shows the number of rats received from the Port Health Officer, Rangoon, and identified during the year. In no case *Pr. pestis* was detected :—

| Species.       |     |     | Live and dead rats (Port area). | Live rats (Steamships). | Dead rats (Steamships). |
|----------------|-----|-----|---------------------------------|-------------------------|-------------------------|
| G. bengalensis | ... | ... | 996                             | Nil.                    | Nil.                    |
| R. norvegicus  | ... | ... | 171                             | 15                      | Nil.                    |
| R. rattus      | ... | ... | 165                             | 20                      | Nil.                    |
| M. concolor    | ... | ... | 346                             | Nil.                    | Nil.                    |
| M. musculus    | ... | ... | 356                             | 72                      | 1                       |
| C. coerulea    | ... | ... | 299                             | Nil.                    | Nil.                    |
| Total          |     |     | 2,333                           | 107                     | 1                       |



In addition, 28 rats were received from other sources.

(xv) *Identification of snakes*.—Fourteen snakes were received during the year and were identified as follows :—

|                                 |     |   |                                       |     |     |   |
|---------------------------------|-----|---|---------------------------------------|-----|-----|---|
| (1) <i>Lycodon aulicus</i>      | ... | 3 | (5) <i>Zamenis korros</i>             | ... | ... | 2 |
| (2) <i>Boiga multimaculatus</i> | ... | 2 | (6) <i>Zamenis mucosus</i>            | ... | ... | 1 |
| (3) <i>Typhlops</i>             | ... | 1 | (7) <i>Natrix stolatus</i>            | ... | ... | 2 |
| (4) <i>Chrysopelea ornata</i>   | ... | 2 | (8) <i>Dipsadomorphus hexagonotus</i> |     |     | 1 |

MALARIA BUREAU.—The following routine work was done during the year :—

(i) *Identification of specimens*.—

|                             |     |     |     |       |
|-----------------------------|-----|-----|-----|-------|
| Anopheline larvæ            | ... | ... | ... | 1,417 |
| Adult anopheline mosquitoes | ... | ... | ... | 30    |

(ii) *Spleen census*.—The reports received from 25 districts comprising 79 townships and 274 villages were recorded.

(iii) *Fish Breeding*.—During the year under report, 12,892 fish were born in the central hatchery. Eight thousand six hundred and fifty-one fish were distributed to various parts of Burma, either for breeding purposes or for introduction into water collections, as an anti-mosquito measure.

Subsidiary hatcheries at Hlegu and Kungyangôn were inspected by the Malariologist and the Assistant Malariologist respectively.

(iv) *Quinine Distribution*.—Approximately 63,252 treatments of cinchona febrifuge were distributed as against 1,77,942 in the previous year. The decrease was due to a restriction placed in free distribution of quinine.

(v) Weekly reports on anti-malaria measures carried out at Kyaukpyu, Lashio and Maymyo, were systematically scrutinised at the Malaria Bureau, and all important features regarding these measures were brought to the notice of the Director of Public Health, Burma, with necessary remarks and suggestions.

(vi) *Inspections*.—Inspection of anti-malaria work was carried out by the staff of the Malaria Bureau at Katha, Wuntho, Kawlin, Shwebo and Maymyo.

(vii) *Malaria Surveys*.—Malaria surveys of the following areas were undertaken during the year.—(1) Kya-In Township (*Amherst District*), (2) Kentung. (3) Pegu South Forest Division, (4) Yinmabin and Pale Townships (*Lower Chindwin District*), (5) Suburbs of Prome, (6) Salin Town, (7) Mingaladon Aerodrome and (8) Thakutpin Forest Reserve Area (*Hanthawaddy District*).

(viii) The method of manufacture of cinchona febrifuge tablets as carried out at the Central Jail at Rangoon, was studied by the Malariologist during the year, with a view to submit proposals for undertaking the same by the Public Health Department.



**CHEMICAL LABORATORY.**—A total of 1,035 samples, comprising of 393 samples of water, 12 samples of effluents, and 630 samples of foods, drugs and other miscellaneous articles, were examined during the year.

*Water.*—Of the 393 samples examined, 54 samples were received from the Water Officer under the Burma Underground Water Act, 1930. The remaining samples were received from the Municipalities, District Councils, Town Committees, Hospitals, Jails and other sources.

*Effluents.*—All the 12 samples of effluents were received from the Public Works Department.

A detailed statement of miscellaneous articles examined, is appended to this report.

**III. INVESTIGATION AND RESEARCH**—(a) *Presumptive coliform count.*—One hundred and fifty samples of water were tested for presumptive coliform count, according to the method given in Report No. 71, published by the Ministry of Health, London. Tests were also carried out with the same samples, according to the technique followed by this laboratory. A remarkable corroboration of results was obtained. Of the 54 samples, which showed a coliform count of 2 or less, when tested by the former method, all except 3, conformed to a satisfactory standard of bacteriological purity as judged by the method adopted in this laboratory. In the case of the three exceptions, lactose fermenters were present in 20 c.c. in two, and in 10 c.c. in the remaining one.

On examining the data the other way round, it was found that, with the exception of five samples, the coliform count was never more than 2 in samples of water which, when tested according to the method followed in this laboratory, showed an absence of lactose fermenters in 20 c.c. In case of these exceptions, the count did not exceed 5.

A report on the method of bacteriological examination of water as followed in this laboratory, was submitted through the Director of Public Health, Burma, to the Director, All-India Institute of Hygiene and Public Health, Calcutta, in compliance with the latter's request.

(b) *Toddy-drinking—its influence on the incidence of cholera.*—Toddy-drinking is very prevalent in Burma. A belief exists that in many cases, the onset of cholera takes place soon after toddy drinking. An investigation was undertaken to verify this.

There are four kinds of toddy in vogue in Burma :—

(i) *Dhani-toddy*, which is usually taken by people in the delta districts and in the Arakan Division. There is no *Dhani* palm in Upper Burma, as this palm grows in brackish water only. This toddy is available for about eight months beginning from September.

(ii) *Htan-toddy.*—This beverage is largely partaken of by the people of Upper Burma, where the *Htan* palm grows in profusion.



(iii) *Pai-toddy*.—This is only used in Upper Burma and is not as easily available as *Htan* toddy. There is a belief that *pai-toddy* is incompatible with pork. Taken together, they will cause diarrhoea.

(iv) *Date-toddy*.—It is taken only by some people in Arakan where it is available in small quantities.

Toddy is taken either when it is sweet and unfermented, or in fermented state.

Histories of cholera cases recorded in form P.H.6-S, during the period, January to August 1940 were examined. Out of 407 cases recorded, only 10 gave the history of drinking some kind of toddy or other before the onset of the disease. Of these, in seven cases, the infection could definitely be traced to sources other than toddy. It is therefore difficult to incriminate toddy-drinking by itself, to be responsible for the onset of cholera. Toddy, however, acts as a laxative and may thus hasten the onset of symptoms in previously infected persons.

A detailed report was submitted to the Director of Public Health, Burma, with this office endorsement No. 576/13P-9, dated the 30th June 1940.

(c) *Nutrition Survey*.—The investigation as regards nutritive values of indigenous foodstuffs, was continued throughout the year. One hundred and sixty-four articles were analysed, a detailed list of which is appended to this report.

PUBLIC HEALTH PROPAGANDA.—(a) A lecture on “The Nature and Preparation of Prophylactic Vaccines issued by the Public Health Department”, was given by the Director of this Institute on the 29th August 1940, to the members of the Burma Branch of the British Medical Association. The lecture was published in the October 1940 issue of the Burma Medical Journal.

(b) Radio broadcast talks on “Fitness Wins” and “Malaria” were delivered by the Malariologist, on the 27th and 31st May 1940 respectively.

(c) Lectures on “Malaria” and “Venereal Diseases” were delivered by the Assistant Malariologist to the Anglo-Vernacular Teachers at the Physical Training Camp on Cabin Island, on the 20th and 27th April 1940.

(d) A lecture on “Infectious Diseases” was delivered by the Assistant Malariologist at the Health Week for the women students of Judson College on the 15th August 1940.

(e) The staff and the students of the Institute rendered technical assistance to the Annual Baby Show, held at the Tabaung Festival of the Shwedagon Pagoda.



(f) Various articles of exhibit, belonging to the Red Cross Society and maintained at this Institute, were sent out on thirteen occasions during the year under report to the following places :—

- |                           |                                      |
|---------------------------|--------------------------------------|
| (1) Nyaunglebin.          | (7) Magwe.                           |
| (2) Pegu.                 | (8) Dedaye.                          |
| (3) Baby Show at Rangoon. | (9) Mandalay.                        |
| (4) Kyaukpyu.             | (10) Maymyo.                         |
| (5) Hlegu.                | (11) Hteindaw (Tharrawaddy District) |
| (6) Natialin.             | (12) Pyapôn                          |
| (13) Akyab.               |                                      |

(g) Repairs and renovations of various Public Health posters, models and diagrams were constantly carried out.

(h) Diagrams of poisonous snakes found in Burma were drawn in their natural colours, at this Institute, for the purpose of making posters on snake-bite.

(i) The Public Health Pamphlet, "A Key to the Identification of the Female Anopheline Mosquitoes of Burma" was revised, and brought up to date.

(j) A demonstration on the fumigation of rat holes by cyanogassing, was given to the staff of the Combined Detention Hospital, at the Sale Barracks during the year under report by the staff of the Bacteriological Section.

(k) CINEMA SHOWS.—On nine occasions during the year, cinema shows and demonstrations were given at this Institute.

(l) MEETINGS.—During the year under report, 34 meetings were held at the Institute by various Societies and Committees, such as the Burma Red Cross Society, the National Council of women in Burma, the Burma Tuberculosis and Leprosy Relief Association, etc. The Annual General Meeting of the Red Cross Society was presided over by His Excellency the Governor of Burma.

V. ISSUE OF PROPHYLACTIC VACCINES.—The following table shows the issue of prophylactic vaccines during the year :—

| Name of prophylactic vaccines. | Number of requisitions complied with. | Quantity issued. |
|--------------------------------|---------------------------------------|------------------|
| Plague vaccine ... ..          | 258                                   | 152,028 doses.   |
| Cholera vaccine ... ..         | 657                                   | 703,856 c.cs.    |
| Influenza vaccine ... ..       | 3                                     | 40 c.cs.         |

K. P. KUNDU,  
M.B., (Cal.) D. Bact. (Lond.),  
Director, Harcourt Butler Institute of  
Public Health.

RANGOON, the 20th May 1941.



TABLE I.

*Detailed Statement of Miscellaneous Articles Examined during the year ending 31st December 1940.*

| No.   | Description of Samples.     |     |     | Number examined. | Number adulterated or otherwise unsatisfactory. | Percentage of adulteration. |
|-------|-----------------------------|-----|-----|------------------|---|-----------------------------|
| (1)   | (2)                         |     |     | (3)              | (4)   | (5)                         |
| 1     | Ampoules, glass             | ... | ... | 29               | ...   | ...                         |
| 2     | Boiler incrustation         | ... | ... | 1                | ...   | ...                         |
| 3     | Broth                       | ... | ... | 66               | ...   | ...                         |
| 4     | Butter                      | ... | ... | 3                | 3   | 100·0                       |
| 5     | Coke                        | ... | ... | 3                | ...   | ...                         |
| 6     | Crayons, coloured           | ... | ... | 16               | 8   | 50·0                        |
| 7     | Disinfectants               | ... | ... | 12               | ...   | ...                         |
| 8     | Ether                       | ... | ... | 1                | ...   | ...                         |
| 9     | Fruits                      | ... | ... | 1                | ...   | ...                         |
| 10    | Ghee                        | ... | ... | 55               | 7   | 12·7                        |
| 11    | Glycerine                   | ... | ... | 1                | ...   | ...                         |
| 12    | Honey                       | ... | ... | 1                | ...   | ...                         |
| 13    | Maize                       | ... | ... | 2                | ...   | ...                         |
| 14    | Medicine                    | ... | ... | 1                | ...   | ...                         |
| 15    | Milk, fresh                 | ... | ... | 92               | 78  | 84·8                        |
| 16    | Milk, evaporated            | ... | ... | 17               | 4   | 23·5                        |
| 17    | Milk, reconstituted         | ... | ... | 1                | ...   | ...                         |
| 18    | Oil, mustard                | ... | ... | 1                | ...   | ...                         |
| 19    | Phenol                      | ... | ... | 3                | ...   | ...                         |
| 20    | Powders, face               | ... | ... | 2                | ...   | ...                         |
| 21    | Reagent, Nessler's          | ... | ... | 2                | ...   | ...                         |
| 22    | Rice                        | ... | ... | 49               | 34  | 69·4                        |
| 23    | Rice bran                   | ... | ... | 2                | ...   | ...                         |
| 24    | Salt                        | ... | ... | 1                | ...   | ...                         |
| 25    | Salt, iodised               | ... | ... | 4                | ...   | ...                         |
| 26    | Soil                        | ... | ... | 2                | ...   | ...                         |
| 27    | Starch                      | ... | ... | 3                | ...   | ...                         |
| 28    | Sugar                       | ... | ... | 1                | ...   | ...                         |
| 29    | Sugar candy                 | ... | ... | 1                | ...   | ...                         |
| 30    | Tablets, Cinchona febrifuge | ... | ... | 35               | ...   | ...                         |
| 31    | Tablets, eye lotion         | ... | ... | 2                | ...   | ...                         |
| 32    | Vaccine, Cholera            | ... | ... | 45               | ...   | ...                         |
| 33    | Vegetables                  | ... | ... | 11               | ...   | ...                         |
| Total |                             |     | ... | 466              | ...   | ...                         |



TABLE II.

*Detailed Statement of the 164 articles examined for their Food Values.*

| No. | Name of Food-Stuff.                    | Number<br>examined | No. | Name of Food-Stuff.                          | Number<br>examined. |
|-----|--|--------------------|-----|--|---------------------|
| (1) | (2)                                    | (3)                | (1) | (2)  | (3)                 |
|     | <i>Cereals and Pulses (26).</i>        |                    |     | <i>Leafy vegetables (28)—<br/>concl'd.</i>   |                     |
| 1   | Rice ... ..                            | 12                 |     | Brought forward ...                          | 33                  |
| 2   | Atta ... ..                            | 1                  | 23  | Kinmungyin leaves ...                        | 1                   |
| 3   | Wheat flour ...                        | 1                  | 24  | Minkhwa leaves ...                           | 1                   |
| 4   | Sujee ... ..                           | 1                  | 25  | Tamarind leaves ...                          | 1                   |
| 5   | Sa-daw-pe ...                          | 1                  | 26  | Canyut (country<br>variety of<br>Asparagus). | 1                   |
| 6   | White bean ( <i>Pebyu-<br/>gale</i> ). | 1                  | 27  | Drumstick leaves ...                         | 2                   |
| 7   | Red bean ( <i>Pegya</i> ) ...          | 1                  | 28  | Kim-peik ... ..                              | 1                   |
| 8   | Soya bean (Black) ...                  | 1                  | 29  | Kyee-chee ... ..                             | 2                   |
| 9   | Soya bean (large<br>pearl.)            | 1                  | 30  | Phalan-taung-mway                            | 1                   |
| 10  | Soya bean (large<br>pearl roasted).    | 1                  | 31  | Chinese variety of<br>Ipomoca.               | 2                   |
| 11  | Fried Mung Dahl ...                    | 1                  | 32  | Bean leaves ...                              | 1                   |
| 12  | Lentils ... ..                         | 1                  | 33  | Hmonado leaves and<br>Stems.                 | 2                   |
| 13  | Green gram ...                         | 1                  | 34  | Gourd leaves and<br>stalks.                  | 1                   |
| 14  | Bengal gram ...                        | 1                  | 35  | Aung-me-nyo leaves                           | 2                   |
| 15  | Red gram ...                           | 1                  | 36  | Byone-hmway vege-<br>tables.                 | 1                   |
|     | <i>Leafy vegetables (28).</i>          |                    | 37  | Pha-baung vegetable                          | 1                   |
| 16  | Safflower leaves ...                   | 1                  | 38  | Yay-ka-nyut vegetable                        | 1                   |
| 17  | Cabbage rye ...                        | 1                  |     | <i>Other vegetables (22).</i>                |                     |
| 18  | Gourd vegetable ...                    | 1                  | 39  | Pe-po-de (Jerusalem<br>artichoke).           | 1                   |
| 19  | White sorrel leaves ...                | 1                  | 40  | Green marian ...                             | 1                   |
| 20  | Red sorrel leaves ...                  | 1                  | 41  | Taing-htaung-pai ...                         | 1                   |
| 21  | Radish flowers ...                     | 1                  |     |  |                     |
| 22  | Chrysanthemum vege-<br>table.          | 1                  |     |  |                     |
|     | Total, carried over ...                | 33                 |     | Total, carried over ...                      | 57                  |



TABLE II—contd.

*Detailed Statement of the 164 articles examined for their Food Values—  
contd.*

| No.<br>(1) | Name of Food-Stuff.<br>(2)                 | Number<br>examined<br>(3) | No.<br>(1) | Name of Food-Stuff.<br>(2)                | Number<br>examined<br>(3) |
|------------|--|---------------------------|------------|---|---------------------------|
|            | <i>Other vegetables (22)—<br/>concl'd.</i> |                           |            | <i>Roots and tubers (7)—<br/>concl'd.</i> |                           |
|            | Brought forward ...                        | 57                        |            | Brought forward ...                       | 81                        |
| 42         | Padatsa ...                                | 1                         | 64         | Arrowroot ...                             | 1                         |
| 43         | Subok-gyi ...                              | 1                         | 65         | Gadut ...                                 | 1                         |
| 44         | Edible cactus ...                          | 1                         |            | <i>Nuts and oilseeds (3).</i>             |                           |
| 45         | Ye-hti-gayon ...                           | 1                         | 66         | Coconut ...                               | 1                         |
| 46         | Brinjal ...                                | 2                         | 67         | Groundnut ...                             | 1                         |
| 47         | Hog apples ...                             | 1                         | 68         | Groundnut, roasted ...                    | 1                         |
| 48         | Phanga fruits ...                          | 1                         |            | <i>Fruits (32).</i>                       |                           |
| 49         | Zaungyan fruits ...                        | 1                         | 69         | Ripe marian (sour<br>quality.)            | 2                         |
| 50         | Kha-we-thee ...                            | 1                         | 70         | Melon ...                                 | 1                         |
| 51         | Myo-pyet-Kayan ...                         | 1                         | 71         | Danyin-thee (tender)                      | 7                         |
| 52         | Ladies finger ...                          | 1                         | 72         | Ye-ngan-thee ...                          | 1                         |
| 53         | Green tamarind ...                         | 1                         | 73         | Thit-to-thee ...                          | 1                         |
| 54         | Cucumber (mature) ...                      | 2                         | 74         | Kanazo-thee ...                           | 2                         |
| 55         | Green sa-daw-pe pods                       | 1                         | 75         | Tha-kya-thee (sugar<br>fruits).           | 2                         |
| 56         | Green papaya ...                           | 1                         | 76         | Damson fruit (Mai-<br>mum-thee).          | 1                         |
| 57         | Hibiscus flowers ...                       | 1                         | 77         | Pine apple ...                            | 1                         |
| 58         | Gorkha-thee ...                            | 1                         | 78         | Guava ...                                 | 1                         |
|            | <i>Roots and tubers (7).</i>               |                           | 79         | Indian gooseberry ...                     | 1                         |
| 59         | Pe-myi ...                                 | 1                         | 80         | Thabye-thee ...                           | 1                         |
| 60         | Sweet potato ...                           | 1                         | 81         | Jack fruit ...                            | 1                         |
| 61         | Potato (Naihital type)                     | 1                         | 82         | Mango ...                                 | 2                         |
| 62         | Potato (Shan type) ...                     | 1                         |            |   |                           |
| 63         | Aurum ...                                  | 1                         |            |   |                           |
|            | Total, carried over ...                    | 81                        |            | Total, carried over ...                   | 110                       |



TABLE II—concl'd.

*Detailed Statement of the 164 articles examined for their Food Values—*  
concl'd.

| No.<br>(2) | Name of Food-Stuff.<br>(2)  | Number<br>examined<br>(3) | No.<br>(1) | Name of Food-Stuff.<br>(2)                | Number<br>examined.<br>(3) |
|------------|-----------------------------|---------------------------|------------|---|----------------------------|
|            | <i>Fruits (32)—concl'd.</i> |                           |            | <i>Miscellaneous food-stuff<br/>(29).</i> |                            |
|            | Brought forward ...         | 110                       |            | Brought forward ...                       | 135                        |
| 83         | Doorian ...                 | 1                         | 106        | Vermicelli (Kya-zan)                      | 1                          |
| 84         | Mangosteen ...              | 1                         | 107        | Chinese spaghetti<br>(Myu-swan).          | 1                          |
| 85         | Ye-yo ...                   | 1                         | 108        | Soya bean coffee ...                      | 3                          |
| 86         | Soon-moon ...               | 1                         | 109        | Soya bean milk ...                        | 5                          |
| 87         | Kyet-mouk-thee ...          | 1                         | 100        | Soys bean cake ...                        | 1                          |
| 88         | Custard apple ...           | 1                         | 111        | Tow Fu ...                                | 1                          |
| 89         | Banana ...                  | 2                         | 112        | In-oo ...                                 | 1                          |
|            | <i>Flesh foods (17).</i>    |                           | 113        | Kaing-oo...                               | 1                          |
| 90         | Dried Beef ...              | 1                         | 114        | Seinsa-oo ...                             | 1                          |
| 91         | Dried Mussel ...            | 1                         | 115        | Kin-bon ...                               | 1                          |
| 92         | Fish meal chips ...         | 1                         | 116        | Mushrooms (Mho) ...                       | 1                          |
| 93         | Nga-chin ...                | 1                         | 117        | Pe-byar ...                               | 1                          |
| 94         | Turtle eggs ...             | 2                         | 118        | Jaggery ...                               | 1                          |
| 95         | Lobster, head (fresh)       | 1                         | 119        | Pazun-chin ...                            | 1                          |
| 96         | Lobster body (fresh)        | 1                         | 120        | Pazun-gale-chin ...                       | 1                          |
| 97         | Bhekti fish (fresh) ...     | 1                         | 121        | Doorian preserve ...                      | 1                          |
| 98         | Rohn fish (fresh) ...       | 1                         | 122        | Milled rice cooked in<br>cows milk.       | 1                          |
| 99         | Nga-phaung-zau ...          | 1                         | 123        | Bengal gram curd ...                      | 1                          |
| 100        | Nga-myin-yin (fresh)        | 1                         | 124        | Sea weeds ...                             | 2                          |
| 101        | Hilsa fish (fresh) ...      | 1                         | 125        | Fermented Nyan<br>flower.                 | 1                          |
| 102        | Hilsa fish roe (fresh)      | 1                         | 126        | Fermented sesamum<br>oil cake.            | 1                          |
| 103        | Goat mutton ...             | 1                         | 127        | Poneye gyi ...                            | 1                          |
| 104        | Ngapi ...                   | 1                         |            |   |                            |
| 105        | Fats of prawns ...          | 1                         |            |   |                            |
|            | Total, carried over ...     | 135                       |            | Total ...                                 | 164                        |



Misc.—Gen. 19,

G.B.I.B.P.—No. 616, 22 12 37—693,000.

Public Health

208 /22P-1 15 JAN 1940  
Department Letter No. \_\_\_\_\_, dated \_\_\_\_\_

Quote this line in reply-  
ing or referring to this  
letter.

Address your reply by  
designation and not by  
name.

From

Mr.K.P.Kundu, M.B.(Cal.),D.Bact.(Lond.),  
Director, Harcourt Butler Institute  
of Public Health, Rangoon.

To

The Secretary,  
Royal Sanitary Institute,  
London.

SUBJECT Annual Report on the Working of the Harcourt  
Butler Institute of Public Health, Rangoon.

Sir,

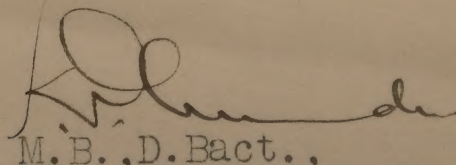
With reference to your letter No.12791/9391,  
dated the 10th November 1939, I have the honour to  
forward herewith copies of the reports for the years,  
1935-1936-1937 and 1938.

The reports for the years 1932 to 1934 were  
not separately printed, but were incorporated in the  
Annual Public Health Administration Report of those  
years, copies of which were supplied to you direct  
by the Superintendent, Government Printing and  
Stationery, Burma, Rangoon.

I have the honour to be,

Sir,

Your most obedient servant,



M.B.,D.Bact.,  
DIRECTOR, HARCOURT BUTLER INSTITUTE  
OF PUBLIC HEALTH, RANGOON.

KO.









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